



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR     | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|--------------------------|---------------------|------------------|
| 09/815,311   | 03/23/2001  | Eduardo Grizante Redondo | 05788.0157          | 7258             |
| 22852  | 7590        | 11/12/2003               | EXAMINER            |                  |
| FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER<br>LLP<br>1300 I STREET, NW<br>WASHINGTON, DC 20005 |             |                          |                     | GRAY, JILL M     |
| ART UNIT   |             | PAPER NUMBER             |                     |                  |
|  |             | 1774                     |                     |                  |
| DATE MAILED: 11/12/2003 <i>20</i>  |             |                          |                     |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |
|------------------------------|------------------------|---------------------|
|                              | 09/815,311             | REDONDO ET AL.      |
| <b>Examiner</b>              | <b>Art Unit</b>        |                     |
| Jill M. Gray                 | 1774                   |                     |

## ***Office Action Summary***

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.**

Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 10 September 2003 .

2a)  This action is **FINAL**.                            2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## **Disposition of Claims**

4)  Claim(s) 16-30 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5)  Claim(s) \_\_\_\_\_ is/are allowed.

6)  Claim(s) 16-30 is/are rejected.

7)  Claim(s) \_\_\_\_\_ is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)  The proposed drawing correction filed on \_\_\_\_\_ is: a)  approved b)  disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)  The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)  All b)  Some \* c)  None of:

1.  Certified copies of the priority documents have been received.
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14)  Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a)  The translation of the foreign language provisional application has been received.

15)  Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO-1449) Paper No(s) .

4)  Interview Summary (PTO-413) Paper No(s). 19 .

5)  Notice of Informal Patent Application (PTO-152)

6)  Other: \_\_\_\_\_.

## **DETAILED ACTION**

### **Remarks**

The advisory action of September 29, 2003 has been rescinded.

### **Response to Amendment**

The rejection of claims 16-30 under 35 U.S.C. 102(e) as being anticipated by Sonoda et al, 5,707,732 in view of Betso et al, 6,262,16 B1, cited to show the state of the art is withdrawn upon further consideration.

### **Claim Rejections - 35 USC § 102**

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

### **Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 16-30 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Sonoda et al, 5,707,732 (Sonoda)

in view of Betso, et al, 6,262,161 B1 (Betso), cited to show the state of the art, for reasons of record.

Sonoda teaches a flame retardant composition, cable coated with said composition and a method for producing said cable, wherein the cable comprises a conductor and a flame-retardant coating, said coating being essentially as claimed by applicants. This coating comprises (a) an ethylene copolymer having a density of from .905 to .970 g/cm<sup>3</sup> and (b) a copolymer of ethylene with at least one alpha-olefin having a density of from 0.860 to 0.904 g/cm<sup>3</sup>, (c) magnesium hydroxide in an amount to impart flame-retardant properties, and grafting organo silane groups onto the polymer chain of at least one of the polymeric components. See column 2, lines 18-24, column 3, lines 53-57, and column 6, lines 41-59. Furthermore, Sonoda teaches that the polymeric component (a) is a component of the type set forth in claim 17 (column 3, lines 64-67), and that the component (b) is made using a single-site catalyst as required by claim 19 (column 2, lines 30-31). Accordingly, the property required by claim 18 is inherent. As to claim 20, this is a process limitation drawn to the method of making the magnesium hydroxide that adds no patentable weight to the instant claimed cable, in the absence of factual evidence to the contrary. As to claims 21 and 22, Sonoda teaches that the magnesium hydroxide is present within the range claimed by applicants in claim 22, which necessarily results in an LOI index as claimed in claim 21. See column 6, line 60 through column 7, and line 13. Regarding the hydrolyzable organic silane groups grafted onto the polymer chain "for compatibilization of the natural magnesium hydroxide with the polymeric components", organo silane compounds are known

coupling agents. Hence, this requirement is not more than the requirement that the organic silane component function in its normal capacity, i.e. the function as a coupling agent. Betso is cited to show the state of the art at the time the invention was made, and teaches compositions comprising an ethylene random interpolymer, magnesium hydroxide and silane coupling agents. The coupling agent can be grafted onto the interpolymer and serves to couple the filler to the interpolymer. Thus, the teachings of Betso clearly show the inherent characteristics of hydrolyzable organic silanes that can be grafted onto ethylene polymers and copolymers.

Regarding the specific type of magnesium hydroxide, Sonoda at column 6, line 62 teaches that any "conventional off-the-shelf" magnesium hydroxide can be used. This teaching clearly embraces natural magnesium hydroxide and the skilled artisan would immediately envisage known commercially available magnesium hydroxides such as "HYDROFY" (a natural magnesium hydroxide). Accordingly, the teachings of Sonoda anticipate the invention as claimed.

In the alternative, Sonoda provides clear direction as to what hydrated inorganic flame retardant fillers are suitable, namely, magnesium hydroxide and a suggestion that any conventional off-the-shelf magnesium hydroxide can be used with a reasonable expectation of success. This teaching would have provided motivation to the skilled artisan to use any commercially available magnesium hydroxide, such as "HYDROFY" with the expectation of obtaining a composition having flame retardant properties. As set forth previously, there is no clear factual evidence on this record of unexpected or superior properties of a self-extinguishing cable having a flame-retardant coating

composition, when the flame-retardant used is natural magnesium hydroxide instead of synthetic magnesium hydroxide, said unexpected or superior properties being directly related to the claimed critical natural magnesium hydroxide. Accordingly, it is the examiner's position, in the absence of such evidence, that this requirement is not a matter of invention.

Claims 16-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sonoda et al, 5,707,732 (Sonoda) as applied above to claims 16-30, in view of Metzemacher et al, (Metzemacher) 5,139,875.

Sonoda is as applied above and teaches "conventional off-the-shelf" magnesium hydroxide but does not specifically teach natural magnesium hydroxide. Metzemacher teaches surface modified magnesium hydroxides that are used as flame-inhibiting fillers in thermoplastic polyolefins such as polyethylene and copolymers thereof. See abstract and column 4, lines 34-39. These magnesium hydroxides are natural magnesium hydroxides such as those obtained from brucite or synthetic magnesium hydroxides. See column 2, lines 3-6. In addition, Metzemacher teaches that coupling agents such as trialkoxysilanes can be employed and that these compounds contain functional groups which ensure that the matrix comprising the (base) polymer and the aggregates of the magnesium hydroxide particles are best in contact with one another at the interface and are bonded to one another. See column 3, lines 19-35.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use as the magnesium hydroxide of Sonoda any magnesium hydroxides known in the art and commercially available. Furthermore, the teachings of

Metzemacher would have provided direction to the skilled artisan as to what parameters were critical, namely, the utility of magnesium hydroxide as a flame retardant filler in polyolefin compositions and a suggestion that either natural magnesium hydroxide or synthetic can be used with a reasonable expectation of success. This teaching would have provided motivation to the skilled artisan to use as the magnesium hydroxide of Sonoda natural magnesium hydroxide with the reasonable expectation of success and to obtain the efficacious properties associated therewith. As to the limitation of hydrolyzable organic silane groups for compatibilization of the magnesium hydroxide with the polymeric components, Metzemacher teaches that organic silane groups can be added to ensure that the matrix polymer and aggregates of magnesium hydroxide are bonded to one another, further teaching the same types of organic silane groups as Sonoda and considered to be suitable by applicants. This teaching clearly describes compositions having the claimed critical compatibilization property and provides a reasonable basis to infer that the composition of Sonoda would necessarily have this property as well. Accordingly, it is the examiner's position that compatibilization is an inherent property in the composition of Sonoda.

Therefore, when considered as a whole, the combined teachings of Sonoda and Metzemacher would have rendered obvious the invention as claimed in the present claims.

Claims 16-30 are rejected under 35 U.S.C. 103(a) as being obvious over Sonoda, as applied above to claims 16-30 in view of Redondo et al, 6,552,112 B1 (Redondo).

The applied reference has a common inventor with the instant application.

Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention “by another”; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Sonoda is as applied above and teaches “conventional off-the-shelf” magnesium hydroxide but does not specifically teach natural magnesium hydroxide. Redondo teaches a cable with self-extinguishing properties, said cable comprising propylene, a copolymer of ethylene with at least one alpha-olefin having from 3 to 12 carbon atoms, and natural magnesium hydroxide in amounts to impart flame-retardant properties. See abstract. The magnesium hydroxide is produced by grinding natural brucite (per claim

20) and can be used as a flame retardant filler for polyolefins such as polyethylene and polypropylene. See column 3, lines 6-13. At column 9, lines 15-63, Redondo teaches adding a coupling agent to improve the compatibility between magnesium hydroxide and the polymer matrix, wherein this coupling agent is the same as that taught by Sonoda and considered suitable by applicants. In addition, Redondo teaches that the coupling agent can be grafted onto a polyolefin such as polyethylene or copolymer of ethylene with an alpha-olefin, and further refers to the coupling agent as a "compatibilizing agent".

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use as the magnesium hydroxide of Sonoda any magnesium hydroxides known in the art and commercially available. The teachings of Redondo would have provided a suggestion to the skilled artisan to use natural magnesium hydroxide as the magnesium hydroxide of Sonoda with a reasonable expectation of success in obtaining a polymeric composition having flame retardant properties. As to the limitation of hydrolyzable organic silane groups for compatibilization of the magnesium hydroxide with the polymeric components, Redondo teaches that coupling agents can be added to improve compatibility between the polymer matrix and magnesium hydroxide, further teaching the same types of coupling agents as Sonoda and considered to be suitable by applicants. This teaching clearly describes compositions having the claimed critical compatibilization property and shows the inherent characteristic of "compatibilization" in silane compound coupling agents and further provides a reasonable basis to infer that the composition of Sonoda would

necessarily have this property as well. Accordingly, it is the examiner's position that compatibilization is an inherent property in the composition of Sonoda.

Therefore, when considered as a whole, the combined teachings of Sonoda and Redondo would have rendered obvious the invention as claimed in the present claims.

### ***Response to Arguments***

Applicant's arguments filed September 29, 2003 have been fully considered but they are not persuasive.

Applicants argue that Sonoda fails to teach the inclusion of natural magnesium hydroxide and that his vague disclosure of "conventional off-the-shelf magnesium hydroxide" fails to anticipate the presently claimed natural magnesium hydroxide because one of ordinary skill in the art would not be able to "at once envisage" natural magnesium hydroxide from Sonoda's mere recitation of a genus as undefined as "conventional off-the-shelf magnesium hydroxide".

The examiner disagrees. One of ordinary skill in the art is expected and presumed to know something about the art other than what a reference literally teaches. Sonoda's silence as to a specific laundry list of suitable "off-the-shelf" products does not preclude the clear expectation that the skilled artisan in this art should have knowledge of known commercially available magnesium hydroxides, including "HYDROFY" (natural magnesium hydroxide. The skilled artisan would immediately envisage natural magnesium hydroxide or synthetic, which thereby anticipates the present claims.

Applicants argue that Sonoda fails to teach the presently claimed natural magnesium hydroxide either expressly or inherently.

In this regard, it is the examiner's position that the teachings of Sonoda of "conventional off-the-shelf" magnesium hydroxide necessarily embraces natural magnesium hydroxide and thus Sonoda does in fact inherently teach natural magnesium hydroxide and thereby anticipates the present claimed invention.

Applicants argue that natural magnesium hydroxide and synthetic magnesium hydroxide provide different advantages and disadvantages to compositions in which they are comprised, further arguing that research efforts have been directed towards modifying properties of magnesium hydroxide to improve its compatibility with the polymer matrix and its degree of purity and that various synthetic methods have thus been developed.

In this regard, there is no clear factual evidence of record of either a) a materially different product or b) superior or unexpected properties that are directly related to the specific magnesium hydroxide used.

Applicants argue that the examiner assertion of the absence of clear factual evidence distinguishing natural magnesium hydroxide and synthetic magnesium hydroxide is inappropriate in a rejection under 35 U.S.C. 102.

Applicants' remarks are noted and attention is drawn to MPEP 2112.01 which states that "Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been

established... Therefore, the *prima facie* case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product" *In re Best*, 562 F.2d 252, 1255, 195 USPQ 430, 433 (CCPA 1977) and MPEP 2112 which states "[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on 'inherency' under 35 U.S.C. 102..." *In re Fitzgerald*, F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980). In the present case, the examiner has relied upon inherency in the following instances a) that the hydrolyzable organo silane coupling agent of Sonoda functions as a compatibilization agent for the magnesium hydroxide and polymeric component b) that the composition of Sonoda necessarily has the same properties and characteristics of the claimed product, regardless of the specific magnesium hydroxide and c) that the properties of claims 18 and 20 necessarily are the same. Applicants' reference to page 6, lines 7-26 of the specification has been noted. However, this disclosure does not constitute factual evidence comparing natural magnesium hydroxide to synthetic magnesium hydroxide.

Applicants argue that Sonoda does not expressly or inherently disclose hydrolyzable organic silane groups grafted onto the polymer chain for compatibilization of the natural magnesium hydroxide with polymeric components as claimed because Sonoda fails to teach natural magnesium hydroxide and therefore does not and cannot teach hydrolyzable organic silane groups for compatibilization of natural magnesium hydroxide with polymeric components and Sonoda's silane compounds are not present for compatibilization but a wholly separate and different purpose.

First, it is the examiner's position that the prior art is not required to have the "same purpose" as applicants. Second, it is the position of the examiner that the teachings of Sonoda fully embrace natural magnesium hydroxide. Moreover, it is the examiner's position that the express teachings of Sonoda that the copolymer can be made hydrolyzable and that this is accomplished by grafting the copolymer with an alkenyltrialkoxy silane, (column 6, lines 41-48) does teach hydrolyzable organic silane groups grafted onto the polymer chain. Though Sonoda does not teach "for compatibilization of the natural magnesium to the polymer chain", it is the examiner's position that this is an inherent function of the silane and the claiming of a new use, new function which is inherently present in the prior art does not necessarily make the claim patentable. *In re Best, ibid.* That the compatibilization of the magnesium hydroxide and the polymer would have been increased through the use of a silane compound would have been so recognized by persons of ordinary skill in the art.

Applicants argue that the reliance upon Sonoda and Betso for inherency by the examiner fails because of two faulty presumptions 1) that Betso's teachings are adequate to establish inherency and 2) that Sonoda's silane grafts act as a compatibilizer. Applicants additionally argue that Betso merely provides several hypotheses regarding the function of the coupling agent, which by definition is not inherency and that the mere presence of a component does not mean it will inherently function as applicants claim.

Agreeably inherency may not be established by probabilities or possibilities and the result or characteristic must necessarily be present in the prior art to establish the

inherency of that result or characteristic. Betso teaches the same type of silane coupling agents as Sonoda and expressly teaches that the coupling agent "may become coupled, i.e. grafted, to the interpolymer or another polymer", "similarly, component ©(3) may become coupled, i.e. bound to at least one filler", and that the coupling agent may couple the following components, "fillers to interpolymers or polymers". Hence, Betso implicitly teaches that the coupling agent provides compatibility between the filler and polymer and therefore necessarily establishes that coupling agents such as alkoxy silanes provide compatibilization of fillers such as magnesium hydroxide with polymeric components. Accordingly, Betso clearly shows the inherent characteristics of compatibilization in silane coupling agents. "Note that as long as there is evidence of record establishing inherency, failure of those skilled in the art to contemporaneously recognize an inherent property, function or ingredient of a prior art reference does not preclude a finding of anticipation". *Atlas Powder Co. v. IRECO, Inc.*, 190 F.3d. 1342, 1349, 51 USPQ2d 1943, 1948 (Fed. Cir. 1999), MPEP 2131.01.

Applicants argue that because Sonoda's trialkoxysilyl groups are only intended to crosslink polymers and not to couple them with magnesium hydroxide, for this reason alone there is no express or inherent disclosure of the compatibilization limitation.

Again, as set forth previously, applicants attention is directed to MPEP 2131.01 and that failure of Sonoda to contemporaneously recognize the compatibilization limitation does not preclude a finding of inherency and thereby anticipation.

Applicants argue that Sonoda requires that at least one of its polymers be modified with an anhydride of an unsaturated aliphatic diacid, which functions as a coupling agent and that one of ordinary skill would recognize that the anhydrides would compatibilize with the magnesium hydroxide and the organic silane would be available to crosslink the polymers.

In response thereto, it is the examiner's position that while the silane may be available to crosslink this does not negate the inherent properties and characteristics of silane, namely, coupling, and that coupling to some degree will occur. Moreover, applicants' claims are not limited to any amount or degree of compatibilization between the magnesium hydroxide and polymer.

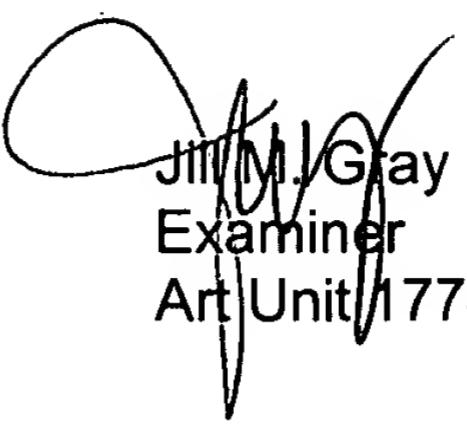
Applicants have not clearly distinguished that which they regard as their invention from the prior art.

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jill M. Gray whose telephone number is 703.308.2381. The examiner can normally be reached on M-F 10:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 703.308.0449. The fax phone number for the organization where this application or proceeding is assigned is 703.872.9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0651.



Jim M. Gray  
Examiner  
Art Unit 1774

jmg